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09/583,177	05/30/2000	Bijendra N Jain	M-7915US	5355

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EXAMINER

LAFORGIA, CHRISTIAN A

ART UNIT	PAPER NUMBER
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2131

DATE MAILED: 03/24/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

09/583,177

Applicant(s)

JAIN ET AL.

Examiner

Christian La Forgia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 1-26, 31, 37, 44 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-30, 32-36, 38-43, 45-49 and 51-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### DETAILED ACTION

1. The request for reconsideration filed on 05 January 2004 is noted and made of record.
2. Claims 27-30, 32-36, 38-43, 45-49, and 51-59 are presented for examination.

#### *Response to Arguments*

3. As per the Applicant's arguments that Claffery does not teach or suggest identifying network elements or pairs of network elements as claimed, the Examiner respectfully disagrees.

Claffery states in the paragraph bridging columns 3 and 4:

It is a further object of the present invention to provide a method and apparatus for determining the optimal path among objects of a satellite communications chain, taking account of factors affecting the quality, as well as the availability, of links in the network.

Claffery also states further in column 4:

All communication systems comprise a number of communications "objects." As used in this application, an "object" is a communication resource such as a ground station, a satellite, an aircraft, a ship at sea, or indeed any other communication resource capable of sending and receiving a communication of interest, whether voice, data, or any other type of communication

The present invention comprises a software driven method and apparatus that first determines what communications "links" are available and constructs a link availability matrix detailing all the time intervals during which pairs of links in the communications system are available.

The Examiner refers to column 3, where Claffery states that information signals are transmitted from a source node to a destination node. The Examiner calls on the first definition of a link from **Newton's Telecom Dictionary**, which states:

The ATM forum defines link as an entity that defines a topological relationship between two nodes in different subnetworks.

Therefore, every link that is found in the chain for the optimal path has a source node and a destination node, therefore for every link determined there is a corresponding source and destination node. Thus the act of determining which links are available also identifies a pair of network elements.

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4. As per the Applicant's argument that Claffery teaches that the identification of pairs of network elements are performed by a manager or operator rather than a processor, again, the Examiner disagrees. As Claffery states in column 4:

The present invention comprises a software driven method and apparatus that first determines what communications "links" are available and constructs a link availability matrix detailing all the time intervals during which pairs of links in the communications system are available.

It is evident by the cited section that a processor executes the software driven method and identifies the network element pairs. Furthermore, the Examiner contends that the mere fact that a method may be performed automatic or autonomously is not enough to distinguish the instant application from the prior art. See *In re Venner*, 262 F.2d 91, 95, 120 USPQ 192, 194 (CCPA 1958). See also MPEP § 2144.04.

5. As per Applicant's arguments that Claffery fails to teach or suggest measuring a network performance metric, the Examiner kindly disagrees. It is a well-known practice in the art to measure network performance metrics including, but not limited to, link distance, link quality, cost functions, and whether a link is active or inactive as illustrated in at least the abstract of U.S. Patent No. 6,055,493.

6. Applicant's arguments with respect to claims 27-30, 32-36, 38-43, 45-49, and 51-59 have been considered but are moot in view of the new ground(s) of rejection.

7. See further rejections that follow.

***Claim Rejections - 35 USC § 103***

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 27 through 30, 32 through 36, 38 through 43, 45 through 49, and 51 through 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,195,553 to

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Claffery et al., hereinafter Claffery, in view of U.S. Patent No. 6,058,103 to Henderson et al., hereinafter Henderson.

10. As per claims 27, 40, and 53, Claffery teaches a computer system comprising:

a processor (column 5, lines 23-35);

a network interface, coupled to the processor and to a network, wherein the network comprises a plurality of network elements and each one of the network elements is coupled to at least one other of the network elements by at least one of a plurality of links (column 5, lines 40-58);

computer readable medium coupled to the processor (column 5, lines 23-35);

computer code, encoded in the computer readable medium, configured to cause the processor to:

identify pairs of the network elements as being in a first set of network element pairs (column 5, lines 49-61);

generate a first matrix from the first set of network element pairs (Figure 1 [block 10]; column 5, line 58 to column 6, line 15; column 8, lines 15-20), wherein

each row in the first matrix corresponds to a corresponding network element pair in the first set of network element pairs (Figure 1 [block 10]; column 5, line 58 to column 6, line 15; column 8, lines 15-20), and

form a second set of network element pairs (Figure 1 [block 16]; column 6, lines 22-54), wherein

the second set of network element pairs contains independent network element pairs in the first set of network element pairs (column 8, lines 26-33), and

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each one of the independent pairs of network element corresponds to a one of the independent rows of the first matrix (column 8, lines 15-20; column 8, lines 26-33); measure a measured network performance metric between a first network element and a second network element of each network element pair in the second set of network element pairs (column 6, lines 22-29); and

compute a computed network performance metric between a first network element and a second network element of a remaining network element pair in the first set of network element pairs using at least one of the measured network performance metrics, wherein the remaining network element pair corresponds to a non-independent row of the first matrix (Figure 1 [block 18]; column 8, line 43 to column 9, line 16). Claffery does not teach the first matrix comprises independent rows and non-independent rows.

11. Henderson teaches wherein the first matrix comprises independent rows and non-independent rows (Figures 5c and 5d; column 14, lines 9-56). Wherein the independent rows are drawn to connection numbers 511, 513, 514, 516-519, and 522 and the non-independent rows are drawn to connection numbers 512, 515, 520, and 521. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have first matrix comprise of independent and non-independent rows, since it has been held in Claffery in column 18 that such a modification would aid in measuring performance metrics between adjacent nodes and computing performance metrics for nodes that have an intervening node.

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12. Regarding claims 28 and 41, Claffery teaches wherein the first set of network element pairs is a requirements set (Figure 1 [block 10]; column 5, line 58 to column 6, line 16; column 8, lines 15-20).

13. With regards to claims 29 and 42, Claffery teaches wherein the second set of network element pairs is a measurements set (Figure 1 [block 16]; column 6, lines 22-29).

14. Concerning claims 30, 39, 43, and 52, Claffery teaches wherein each one of the network elements is a router (column 5, lines 40-58).

15. Regarding claims 32, 45, and 54, Claffery teaches wherein the computer code is further configured to cause the processor to:

compute a number, wherein the number is equal to a rank of the first matrix (column 4, lines 31-44);

determine if a first the number of rows of the first matrix are independent (Figure 1 [block 12]; column 4, lines 31-44; column 8, lines 21-25); and

if the first the number of the rows of the first matrix are not independent, re-arrange the rows of the first matrix such that the first the number of the rows of the first matrix are independent (Figure 1 [block 12]; column 4, lines 31-44; column 8, lines 21-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to compute a number that is equaled to the rank of the first matrix. One of ordinary skill in the art would be motivated to rank the matrices as it serves as a way to rank those network elements which

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provide a connection between the source and destination nodes while eliminating those matrices that do not provide a path between the source and destination nodes.

16. Concerning claims 33, 46, and 55, Claffery teaches wherein the computer code is further configured to cause the processor to:

identify a maximal set of independent rows of the first matrix based on the number (Figure 1 [block 12]; column 4, lines 31-44; column 8, lines 21-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to compute a number that is equaled to the rank of the first matrix. One of ordinary skill in the art would be motivated to rank the matrices as it serves as a way to rank those network elements which provide a connection between the source and destination nodes while eliminating those matrices that do not provide a path between the source and destination nodes.

17. With regards to claims 34, 47, and 56, Claffery teaches wherein the computer code configured to cause the processor to re-arrange the rows of the first matrix such that the first the number of the rows of the first matrix are independent, if the first the number of the rows of the first matrix are not independent, is further configured to cause the processor to:

re-arrange the pairs of the network elements in the first set of network element pairs such that the correspondence between each row of the first matrix and the corresponding network element pair in the first set of network element pairs is maintained (Figure 1 [block 12]; column 4, lines 31-44; column 8, lines 21-25).



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18. Regarding claims 35, 48, and 57, Claffery teaches wherein the computer code configured to cause the processor to form the second set of network element pairs is configured to cause the processor to:

copy a first the number of pairs of the network elements in the first set of network element pairs into the second set of network element pairs (column 6, lines 22-29).

19. Regarding claims 36, 49, and 58, Claffery teaches wherein the computer code configured to cause the processor to compute the computed network performance metric between the first network element and the second network element of the remaining network element pair is configured to cause the processor to:

form a second matrix (Figure 1 [block 16]; column 6, lines 22-29; column 8, lines 26-33), wherein

each row of the second matrix corresponds to a corresponding one of the non-independent rows of the first matrix (column 8, lines 26-33), and

the each row of the second matrix is such that the corresponding one of the non-independent rows of the first matrix can be expressed in terms of the independent rows using the each row of the second matrix (column 8, lines 26-33);

organize the measured network performance metrics into a vector (Figures 1 [block 18], 2; column 8, line 43 to column 9, line 16); and

compute the computed network performance metric between the first network element and the second network element of the remaining network element pair by multiplying the vector

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by a row of the second matrix corresponding to the remaining network element pair (Figures 1 [block 18], 2; column 8, line 43 to column 9, line 16; column 9, lines 22-53).

20. Regarding claims 38, 51, and 59, Claffery teaches wherein the computer code configured to cause the processor to compute the computed network performance metric between the first network element and the second network element of the remaining network element pair is further configured to configured to cause the processor to:

create a vector equivalent to the non-independent row of the first matrix by combining a plurality of the independent rows of the first matrix (Figures 1 [block 18], 2; column 8, line 43 to column 9, line 16; column 9, lines 22-53); and

compute the computed network performance metric by combining a measured network performance metric of each network element pair of the second set of network element pairs corresponding to one of the plurality of the independent rows of the first matrix (Figures 1 [block 18], 2; column 8, line 43 to column 9, line 16; column 9, lines 22-53).

### ***Conclusion***

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

22. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 05 January 2004 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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23. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian La Forgia whose telephone number is (703) 305-7704. The examiner can normally be reached on Monday thru Thursday 7-5.

25. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (703) 305-9648. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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